What is claimed is:

[Claim 1]   1. A method for discriminating an optical disk comprising:

operating a focus search for the optical disk to calculate a plurality of peak values and a plurality of trough values of a plurality of signals;

determining a plurality of threshold levels for detecting a plurality of material layers of the optical disk according to the peak values and the trough values of the said signals; and

repeating the focus search for the optical disk to calculate a plurality of distances between the material layers of the optical disk according to the plurality of threshold levels.

[Claim 2]   2. The method of claim 1 wherein each threshold level is the product of each peak value or each trough value and a predetermined ratio.

[Claim 3]   3. The method of claim 1 wherein the focus search operation is a focus open-loop control method.

[Claim 4]   4. The method of claim 1 wherein the signals are a sub-beam add signal and a focus error signal.

[Claim 5]   5. The method of claim 1 wherein the signals are an RF signal and a focus error signal.

[Claim 6]   6. The method of claim 5 wherein the step of repeating the focus search for the optical disk further comprising the step of detecting the RF signal first until a focus point approaches a first reflective layer by detecting the RF signal, and then detecting the focus error signal.

[Claim 7]   7. The method of claim 1 wherein the plurality of material layers includes a plastic layer and a first reflective layer.

[Claim 8]   8. The method of claim 7 wherein the plurality of material layers further includes a second reflective layer.

[Claim 9]   9. A method for discriminating an optical disk comprising:

operating a focus search for the optical disk to detect a plurality of peak values and a plurality of trough values of a first signal and a second signal wherein the peak values and the trough values are generated when detecting a plurality of material layers of the optical disk;

generating a plurality of threshold levels for detecting the material layers of the optical disk by multiplying each peak/trough value and a corresponding ratio; and

repeating the focus search for the optical to calculate a plurality of distances between the material layers of the optical disk according to the threshold levels.

[Claim 10]   10.The method of claim 9 wherein the focus search operation is a focus open-loop control method.

[Claim 11]   11.The method of claim 9 wherein the first signal is a sub-beam add signal and the second signal is a focus error signal.

[Claim 12]   12.The method of claim 9 wherein the first signal is an RF signal and the second signal is a focus error signal.

[Claim 13] 13.The method of claim 12 wherein the step of repeating the focus search for the optical disk further comprising the step of detecting the RF signal first until a focus point approaches a first reflective layer of the optical disk by detecting the RF signal, and then detecting the focus error signal.

[Claim 14] 14.The method of claim 9 wherein the plurality of material layers includes a plastic layer and a first reflective layer.

[Claim 15] 15.The method of claim 14 wherein the plurality of material layers further includes a second reflective layer.

[Claim 16] 16.A method for discriminating an optical disk comprising:
   operating a focus search for the optical disk to detect a plastic layer of the optical disk with a first signal; and

   detecting a first reflective layer of the optical disk with a second signal when the first signal detects the first reflective layer.

[Claim 17] 17.The method of claim 16 further comprising detecting a second reflective layer with the second signal if the second reflective layer of the optical disk exists.

[Claim 18] 18.The method of claim 16 wherein the first signal is a sub-beam add signal and the second signal is a focus error signal.

[Claim 19] 19.The method of claim 16 wherein the first signal is an RF signal and the second signal is a focus error signal.

[Claim 20] 20.The method of claim 16 wherein the first reflective layer exists when the first signal detects a first threshold value.

[Claim 21] 21.The method of claim 20 wherein a focus point passes through the first reflective layer when the first signal detects a second threshold value and then detects a third threshold value.

[Claim 22] 22.The method of claim 21 wherein the second threshold value is not equal to the third threshold value.

[Claim 23] 23.The method of claim 17 wherein a focus point passes through the second reflective layer when the second signal detects a fourth threshold value and then detects a fifth threshold value.

[Claim 24] 24.The method of claim 23 wherein the fourth threshold value is not equal to the fifth threshold value.

[Claim 25] 25.The method of claim 16 wherein the focus search operation is a focus open-loop control method.